



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/004,312	12/06/2001	Yael Nemirovsky	1273	9340

7590 01/09/2004

Edward Langer, Pat. Atty.  
c/o Landon & Stark Associates  
One Crystal Park, Suite 210  
2011 Crystal Drive  
Arlington, VA 22202

EXAMINER

ULLAH, AKM E

ART UNIT PAPER NUMBER

2874

DATE MAILED: 01/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/004,312	<b>Applicant(s)</b> NEMIROVSKY, YAEL	
	<b>Examiner</b> Akm Enayet Ullah	<b>Art Unit</b> 2874	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 December 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

**Detailed Action**

*Applicant cooperation is requested in correcting any errors of which applicant may become aware in the specification.*

**Status of the Application**

*This application claims benefit of a provisional no. 60/251,977 which is filed on 12-07-2003*

*Claims 1- 15 are pending in this application.*

*If applicant is aware of any prior art or any other co- pending application not already of record, he/she is reminded of his/her duty under 37 CFR 1.56 to disclose the same.*

**Drawings**

*This application has been filed on December 06, 2001 with informal drawings, which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.*

**Claim Rejections - 35 USC § 103**

*The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:*

*(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.*

*Claims 1- 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chertkow (USP NO. 6,535,663) in view of Wu et al (USPNO. 6,498,870).*

*Chertkow disclose a microelectromechanical system (MEMS) is a micro device that is generally manufactured using integrated circuit fabrication or other similar techniques.*

*MEMS is currently being pursued in many different fields such as in fiber optic communication system the information is transmitted as a light beam along a glass or plastic wire, known as a fiber. The medium of a MOEMS switch fluid is typically air, but a vacuum, inert gas, or other suitable fluid may also be used (col. 2, lines 53-63).*

*Column 5, last paragraph mentioned that the actuator includes a beam actuator that controllably moves the actuating beams so that the beams that are positioned along the portion of the travel path in which the moving element is located intermittently engage the moving element and thereby move the moving element in a desired direction along the travel path.*

*Column 8 of the reference explained that the moving element 106 (i.e., an optical mirror array) may move any linear direction (col.8, line 34). It is noted that the moving element can be any other shape besides what is explained in figures 2 & 3 (col. 8, lines 40-45).*

*Column 12 of the reference stated that the moving element 106 is preferably “attached” to the actuator be means of a magnetic and/or electrostatic force.*

*Regarding claim 2, means for applying said tilting force comprises **an air blast** apparatus providing said force as a pulse mentioned in column2, lines 53-63 of Chertkow reference.*

*Regarding claim 3, means for applying said titling force comprises **a gas blast** apparatus providing said force as a pulse mentioned in column2, lines 53-63 of Chertkow reference.*

*Regarding claim 4, means for applying said tilting force comprises **a fluid blast** apparatus providing said force as a pulse mentioned in column2, lines 53-63 of Chertkow reference.*

*Regarding claim 5, means for applying a pull-in-force comprises **an electrostatic generator** for generating an electrostatic force mentioned in column 14, line 20-29 of Chertkow reference*

*Regarding claim 6, means for applying a pull-in-force comprises **a magnetic generator** for generating a magnetic force mentioned in column 14, line 20-29 of Chertkow reference*

*Regarding claim 7, wherein said means for applying a pull-in-force comprises a combination of electrostatic and magnetic generators for generating **a combined electrostatic and magnetic force** mentioned in column 14, line 20-29 of Chertkow reference*

*Regarding claim 8, wherein said fins extends from said underside of said mirror in substantially perpendicular fashion, mentioned that moving element 106 of MEMS device 100 operate in at least a first position and a second position to provide, for example, a switching function. A moving element may also operate to perform a switching function in more than two positions in column 10, last paragraph.*

*Regarding claim 9, wherein said fins extends from underside of said mirror in an included fashion, to enhance and prolong the effect of the blast mentioned in column 10, last paragraph and column 11, first paragraph.*

*Regarding claim 10, comprising a plurality of fins extending from underside of mirror in combined perpendicular and inclined fashion mentioned in column 10, last paragraph and column 11, first paragraph.*

*Regarding claim 11, actuation mechanism based upon a gas flow providing a mechanical force and a magnetic force mentioned in column 12, last paragraph and column 13, first paragraph of Chertkow reference.*

*Regarding claim 12, actuation mechanism based upon a gas flow providing a mechanical force and a magnetic generator providing a magnetic force mentioned in column 12, last paragraph and column 13, first paragraph of Chertkow reference.*

*Wu et al (USPNO. 6,498,870) disclose a Micro Electro Mechanical System (MEMS). Column 9, third paragraph of the reference stated that the present invention in which use both attractive and repulsive forces at the same time, or at separate times, are eminently possible. The "push & pull" switch that combines electrostatic pull and electromagnetic push which can be in the same time and/or at separate time.*

*Regarding claim 13, applying a mechanical force to bring the mirror to a tilted position and applying at least one of an electrostatic and magnetic force to achieve pull-in to complete the tilt of the mirror to its final optical switching position mentioned in columns 9-10 of Wu et al.*

*Regarding claim 14 applying a mechanical force to bring the mirror to a tilted position and a combination of an electrostatic and magnetic force to achieve pull-in-to complete the tilt of the mirror to its final position optical switching position mentioned in columns 9-10 of Wu et al.*

*It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the "push & pull" structures of Wu et al with the Chertkow reference since, with both devices being directed to a common use in the same environment, there's an implied suggestion for applying then teachings of one to the other. That is, the skilled worker who is pressured to have knowledge of the prior art, with these two references before him, would immediately recognize the desirability of employing the push-pull structure teachings taught by Wu et al to the device of Chertkow, as claimed.*

Art Unit: 2874

*Note that these type teachings are very elementary teachings in this art thus, where needed, involves only routine skill in the art using combined forces in order to achieve pull in to complete the tilt of the mirror to its final position--- In re Stevens, 101 USPQ 284 (CCPA 1954).*

### **Cited Prior Art**

*The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tilmans et al., Kitagawa et al., Jin et al., Chertkow et al (US2002/0009256) are also cited to show a typical MEMS device along with push-pull force for tilting a moving element respectively. Rimmel (USP NO. 4,061,485) is cited to show the elementary teachings of air blasts, fluid blasts and gas blasts used in this art.*

### **Conclusion**

*Any inquiry concerning this communication or earlier communications from the examiner should be directed to Akm Enayet Ullah whose telephone number is 703-308-4885.*

*The examiner can normally be reached on Mon.- Wed. 5:30-4:00 p.m.*

*If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on 703-3084819. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7721 for regular communications and 703-308-7721 for After Final communications.*



Application/Control Number: 10/004,312

Page 8

Art Unit: 2874

*Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.*



*Akm Enayet Ullah  
Primary Examiner  
Art Unit 2874*

*AUllah  
December 21, 2003*